2007-05909/

January 2004, Vol. 29, No. 1 ISSN 1188-066X

Natural Sciences and Engineering Research Council of Canada

NSERC Contact

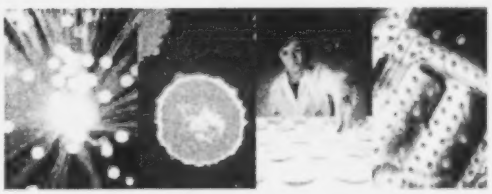
Investing in people, discovery and innovation

4 **Winners of NSERC's 2003 Awards**

6 **Competition News**

8 **A Partnership for Trees**

www.nserc.gc.ca



New Government for Canada, New Vision for NSERC

Editorial by NSERC President Tom Brzustowski

Much has happened since the last issue of *Contact*. Canada has a new government under Prime Minister Paul Martin, and there is a new Minister of Industry, Mme Lucienne Robillard. In addition, the government has created (or re-created) the office of National Science Advisor to the Prime Minister and appointed Dr. Arthur Carty to that post. Dr. Carty's appointment is particularly important because it puts a distinguished scientist who knows universities and NSERC very well at the highest level of government.

Mr. Martin has identified "Building a 21st Century Economy" as one of the new government's three principal themes, and science looms large in this agenda. It seems to me that this is a promising time for university research in science and engineering.

NSERC's New Vision

I think the timing of NSERC's "New Vision" has turned out to be good. During the summer and fall, I met with Ministers, MP's and officials in Ottawa to present the New Vision as described in the last issue. The reaction has been uniformly positive and often enthusiastic. I was told repeatedly that our proposed actions were important, and that to try them as small-scale pilot projects within our current resources was exactly the right way to proceed. Indeed, one Minister expressed his approval in the words, "NSERC is a *federal* agency starting to act as a *national* agency." On the basis of such responses, I believe that NSERC's visibility and credibility in Ottawa are higher than ever.

There is progress to report in implementing the New Vision. Designs for the pilot programs for research capacity building, helping colleges to assist in innovation, and improving science and math education have been drafted, and consultation on them has started. Consultation is also under way on the Big Science framework. The first

(continued on page 2)

NSERC
CRSNG
Ottawa, Canada
K1A 1H5

CANADA POSTES
POST CANADA
Postage paid Port payé
Publications Mail Poste-publications
40062835

Canada

Contact is published by:

Communications Division
NSERC
350 Albert Street
Ottawa, Ontario
K1A 1H5
Tel.: (613) 995-5992
Fax: (613) 943-0742

It is also published on the Internet at www.nserc.gc.ca/publicat.htm.

Please send address changes by e-mail to distribution@nserc.ca.

NSERC is Canada's instrument for promoting and supporting university research in the natural sciences and engineering, other than the health sciences.

NSERC supports both basic university research through discovery grants and project research through partnerships among universities, governments and the private sector, as well as the advanced training of highly qualified people.

Editor-in-Chief
Joyce French
E-mail: joyce.french@nserc.ca

Continued from cover page

local consultations on a small regional office in Atlantic Canada were held in New Brunswick in late November; there was a lot of interest in a local NSERC presence there and discussions highlighted the timeliness and pertinence of NSERC's new initiatives. Visits to the other three provinces in the region are planned for January. You may also know that Winnipeg has been announced as the location of the Prairie office, but the detailed arrangements will be worked out only after local consultations there.

We have heard that the capacity building and other new initiatives would be served best if the regional offices were located close to small universities. We have also heard that there should be regional offices close to large and well-established research universities that could make the best use of them. These views are not inconsistent. If, in fact, it eventually turns out that the five small regional offices not only support the initiatives in the New Vision but could also improve the delivery of our established major programs, then additional offices located closer to research universities might be justified.

Just before Christmas, Treasury Board handed down its decision on our proposed new label. We had proposed "Science and Engineering Canada," but Treasury Board preferred "Science and Engineering Research Canada." This label is longer than our proposal, but more precise, and it does allow us to drop "Natural" and "Council," the two words that have been causing most of the public's confusion with our name. Therefore, while the official name of the organization continues to be the Natural Sciences and Engineering Research Council of Canada, and the acronym is still NSERC, you may expect to start seeing the label "Science and Engineering Research Canada" in our promotional materials.

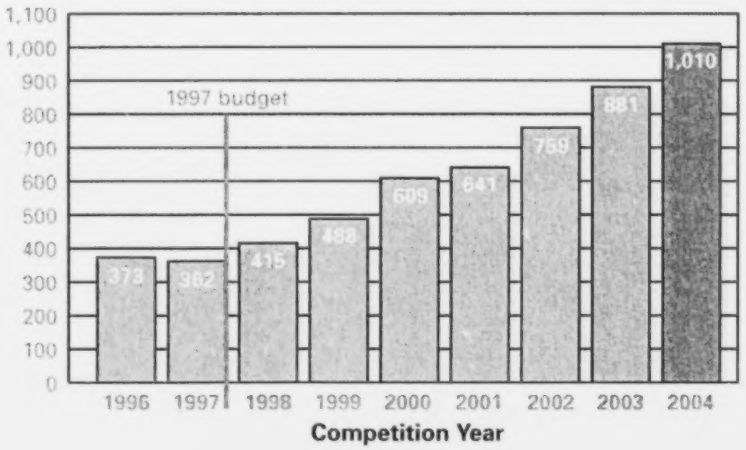
An Indicator of Government Success

As all this was happening, we realized that NSERC had data showing that the Government's initiatives to improve support for university research in science and engineering and to attract good people to do more of it are succeeding in spectacular fashion. These are the initiatives launched first in the 1997 Budget presented by Mr. Martin as Minister of Finance.

The chart below, showing the numbers of first-time applicants for NSERC discovery grants over the last nine years, is a clear indicator of that success. It shows that growth took off when NSERC's budget began to grow after the 1997 Budget.

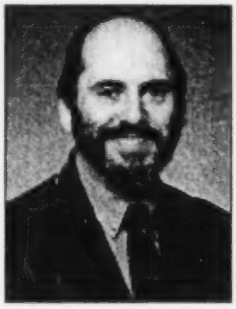
(continued on page 10)

Number* of First-Time Applicants for NSERC Discovery Grants



* Including new appointees to both Tier 1 and Tier 2 Canada Research Chairs.

New Council Appointees Announced



UPEI Photography

Robert Haines

The federal government appointed two new members to Council in the fall, each for a term of three years.

Dr. Robert Haines is a professor in the Department of Chemistry at the University of Prince Edward Island. He has received numerous awards, including the university's Award for Outstanding Scholarly Achievement as well as its Merit Award for Excellence in Teaching. In March 2002, Dr. Haines was elected a Fellow of the Chemical Institute of Canada.

Don Hall, University of Regina

Katherine Heinrich

Dr. Katherine Heinrich is Vice-President (Academic) and a professor of Mathematics and Statistics at the University of Regina. She has received many honours and scholarships and has been active in promoting science as a career, especially to young women. In 1995, she was awarded both the Vancouver YWCA Woman of Distinction Award in Education, Training and Development and the University of Newcastle Gold Medal for Professional Excellence.

NSERC Reps Help Universities Celebrate NSERC's Anniversary

The NSERC Representatives have been busy helping to celebrate NSERC's 25th anniversary by holding events at their institutions. So far, open houses, public lectures, or receptions for 25-year grantees have been organized at the University of Guelph, Queen's University, Acadia University, the Université du Québec à Chicoutimi, the Institut national de la recherche scientifique, the University College of Cape Breton, St. Francis Xavier University, and the University of Western Ontario. At most of these events, those who have had NSERC funding for 25 years received a certificate signed by the President and a commemorative silver NSERC lapel pin. A list of upcoming NSERC 25th anniversary activities is on the Council's Web site at http://www.nserc.gc.ca/reps/events_e.htm.

Just Published: Ethics Panel Survey Results

The Interagency Advisory Panel on Research Ethics has just published the results of its first survey of natural sciences and engineering researchers conducting research involving humans. The online survey – completed by approximately 300 NSERC Discovery Grant holders – explores a wide spectrum of researcher attitudes towards the ethics review process.

The full report, including analysis and recommendations, can be found at http://pre.ethics.gc.ca/english/publicationsandreports/publicationsandreports/nsercsr2003_a.cfm.

NSERC Adds a New Requirement for Documen ng the Impact of Training on Form 100

In recent years, NSERC has been asking professors to standardize the reporting of training in their grant applications. Now we are also requiring that professors obtain consent from those referred to by name as current or past trainees.

The step was taken because training is an important criterion in assessing a grant application and NSERC needed to comply with federal privacy legislation. The hitch is that even though information about trainees is often known or publicly available on the Web, the federal *Privacy Act* still classes it as **private** information that belongs to the person trained and **not** to NSERC or the professor. To include this information in an application, a professor must first obtain the consent of the individual.

In theory, obtaining this consent should be a simple task: many professors already keep track of former trainees. However, this is not always the case, in particular for students and fellows who left the lab several years ago.

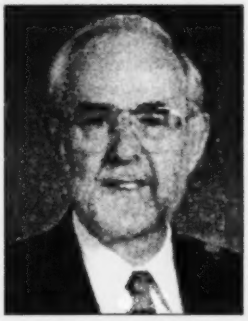
Despite the benefits for peer review and the applicant, this does mean extra work, especially the first time a professor must meet the new requirement. In order to simplify the approval process, we've developed a consent form that researchers can send to former trainees. An affirmative e-mail reply is all that is required for consent. If this can't be obtained, a professor can make a generic or anonymous description of the training contribution.

For more information on documenting training, contact Victor Wallwork, NSERC's Access to Information and Privacy (ATIP) Coordinator, at (613) 995-6214 or victor.wallwork@nserc.ca.

Winners of NSERC's 2003 Awards Honoured

Leader of Sudbury Neutrino Observatory Wins Canada's Top Science Prize

Arthur B. McDonald was awarded the 2003 **Gerhard Herzberg Canada Gold Medal for Science and Engineering** at a gala dinner Nov. 25 at the National Gallery of Canada. The prize guarantees that Dr. McDonald, a professor at Queen's University, will **receive $1 million over the next five years from the Council**.



Denis Drever Photography

NSERC Herzberg Medallist Arthur B. McDonald.

The event also featured an address by Canadian entrepreneur Mike Lazaridis, who joined NSERC in celebrating the achievements of Dr. McDonald and the winners of other NSERC prizes announced earlier in the year.

Dr. McDonald's discoveries about solar neutrinos were the result of one of the major physics experiments of the 20th century, the massive, underground Sudbury Neutrino Observatory (SNO), a 20-year-and-counting international, big science endeavour. And Dr. McDonald's patient, methodical, and energetic leadership was key to its success.

To build SNO, Dr. McDonald managed the creation of the most sensitive neutrino detector to date. It was a massive engineering project that involved the construction of an ultra-clean, ten-storey-high neutrino detector two kilometres underground in INCO Ltd.'s Creighton nickel mine in Sudbury. SNO would be the first neutrino detector able to detect all three kinds of neutrinos (electron, muon, and tau) and to be able to distinguish electron neutrinos from the others.

Denis Drever Photography

Award of Excellence winners: (left to right) J. Richard Bond, Arthur B. McDonald, and John P. Smol.

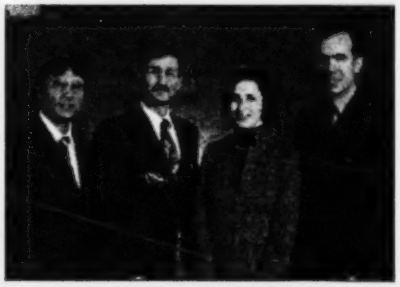
The two other finalists for the NSERC Herzberg Medal were **John P. Smol**, also of Queen's University, and **J. Richard Bond** of the University of Toronto. Each received the **NSERC Award of Excellence** which consists of a crystal sculpture. Drs. Smol and Bond also received $50,000 each in research support.

John Smol transformed paleolimnology and the study of ancient lake sediments into one of the hottest fields in ecology and a powerful tool for revealing how aquatic organisms interact with their environment and respond over time to climate change.

Richard Bond is one of the world's leading cosmologists. He is responsible for major new insights into the nature of dark matter and black holes and for greatly expanding our knowledge of the structure and evolution of the early universe.

The Medal selection process involved both international peer review of the nominees and adjudication by a distinguished NSERC jury. This year's panel was chaired by Dr. Gretchen Harris, a member of NSERC's Council, and a professor at the University of Waterloo.

The winners of NSERC's E.W.R. Steacie Memorial Fellowships, Howard Alper Postdoctoral Prize, and Doctoral Prizes, who were also presented with their awards, were featured in the March 2003 issue of *Contact* (www.nserc.gc.ca/pubs/contactbk_e.htm).



Denis Drever Photography

E.W.R. Steacie Memorial Fellows: (left to right) Zonchao Jia, Gary W. Saunders, Molly Shoichet, and Kim J. Vicente. Missing from the photo are Victoria Kaspi and Michel Gingras.

Denis Drever Photography

NSERC Vice-President Joanne Keselman and NSERC President Tom Brzustowski (right) with T. Ryan Gregory, winner of the NSERC Howard Alper Postdoctoral Prize.

Denis Drever Photography

Doctoral Prize winners: (left to right) Martin Dvorak, David J. Vocadlo, Erik Demaine, and David L. Bryce.

(continued on page 5)

Continued from page 4

For more information on the prizes and prizewinners, visit www.nserc.gc.ca/about/award_e.htm and www.nserc.gc.ca/media_e.htm.

University - Industry Synergy

Seven successful university-industry partnerships from across Canada, winners of the 2003 Synergy Awards for Innovation, were recognized at a gala dinner Oct. 27 at The Fairmont Hotel Vancouver. The awards include a $25,000 research grant for the university partner and an original sculpture for their industrial collaborator.

The winning partnerships for 2003 were:

Category: Small and Medium-Sized Enterprises

- The University of Toronto and ERCO Worldwide, for a 50-year partnership that has had enormous environmental and economic benefits for the pulp and paper and water treatment industries.
- The University of Manitoba and InfoMagnetics Technologies Corporation, for state-of-the-art innovations in the design and circuitry of satellite and wireless antennas.
- The University of Alberta and Matrikon Inc., for leading-edge process and performance monitoring tools that can be used by industry to reduce costs, optimize process operations and improve product quality.

Category: Large Companies

- Dalhousie University and 3M Canada Company and 3M Company, for new electrode materials that can double the storage capacity and operating time of lithium-ion batteries.
- The University of Windsor and NOVA Chemicals Corporation, for new and cost-effective catalysts to produce high-performance plastics.

Category: Two or More Companies

- McMaster University and Tembec Inc. and Dofasco Inc., for statistical methods that recover valuable information from large data flows collected during manufacturing and that lead to major economic benefits and process and product improvements.

Colin Jewsall

Leo Derikx, Joanne Keselman, Zamir K. Punja (Simon Fraser University), Mary-Margaret Gaye (BC Greenhouse Growers' Association), and Tom Brzustowski, at the gala dinner.

Category: Leo Derikx Award

- Simon Fraser University and the BC Greenhouse Growers' Association, for crop protection and environmental management technologies that have enhanced the competitiveness of the Canadian vegetable industry.

Michael Smith Awards

The winners of the 2003 Michael Smith Awards were announced in Ottawa Nov. 18. Named after the late Canadian Nobel laureate Michael Smith, the award honours individuals and groups who make an outstanding contribution to the promotion of science in Canada.

The 2003 winners were:

- Native Access to Engineering Programme (Montréal)
- Royal Astronomical Society of Canada (Toronto)
- Students on Ice (Montréal)
- Philip C. Eastman (Ottawa)
- Scott Mair (Victoria)

For a synopsis of their creative activities aimed at attracting young Canadians to science, visit www.nserc.gc.ca/msmith/recipients/2003_e.htm.

Anthony Scullion Photography

Shown at the Michael Smith Awards Gala at the Canadian Museum of Nature in Ottawa are: Philip C. Eastman, Rajiv Gupta (Royal Astronomical Society of Canada), Corinne Mount Pleasant-Jetté (Native Access to Engineering Programme), Scott Mair, the Honourable Susan Whelan (Minister for International Cooperation), Angela Holmes and Geoff Green (Students on Ice), NSERC Council Member Claude Benoit, and Nigel Lloyd, Executive Vice-President of NSERC.

Competition News

Strategic Project Grants Under Pressure

The Strategic Project Grants program, which targets research in areas of national importance and emerging areas with future potential, has become a victim of its own success.

In the recent competition, NSERC reviewed 422 proposals worth more than $60 million – up 38 per cent from last year and the largest funding request in over a decade. The budget allowed the support of 108 new projects worth $13.33 million (a success rate of 25.6 per cent) but left unfunded more than 100 projects deemed worthy of support by NSERC's review panels.

On the positive side, the overall competition was boosted somewhat by the injection of $3 million in dedicated funding for projects on genomics, climate change and hydrogen/fuel cell technologies, and by a joint initiative with the BIOCAP Canada Foundation.

Under the Strategic Project Grants program, while non-academic partners commit to participate in the research and use the results, their financial contribution is not always necessary.

The following table provides a summary of the 2003-04 competition results:

Summary Results – Strategic Project Grants Competition 2003-04

Area	Number of Appl.	Awards	Success Rate (%)	Total (millions of $) Requested	Awarded
New Directions	24	4	16.7	3.43	0.60
Biosciences	122	32	26.2	19.08	4.39
Environment and Sustainable Development	109	32	29.4	15.63	3.33
Information and Communications Technologies	60	14	23.3	8.52	1.87
Value-Added Products and Processes	107	26	24.3	13.38	3.14
TOTAL	**422**	**108**	**25.6**	**60.04**	**13.33**

In related news, NSERC was able to fund 10 of 32 applications received under a joint initiative with Natural Resources Canada – the Next Generation Technology Initiative in Energy Research and Technology Related to Greenhouse Gas Mitigation. This $5M initiative was aligned under the Strategic Grants Program (SPG) for the 2003 competition, and one more competition is planned for 2004.

NSERC and the Canada Council for the Arts received 10 proposals under the joint New Media Initiative. Two new projects, worth a total of $205,000 (in year 1), were approved for funding.

Changes Planned for 2004-05

The Strategic Project Grants program will undergo some changes during 2004-05. Specifically:

- Strategic Project Grants will be limited to a maximum duration of three years. This change will increase the budget available for each competition, and therefore the success rates, while recognizing the dynamic nature of strategic research. This will apply only to new awards starting in the next competition.
- Special opportunities will continue to exist for funding in climate change and novel greenhouse gas mitigation technologies, and hydrogen/fuel cell related projects because additional funding is available for these areas.
- The New Directions target area will be integrated with a new program entitled Special Research Opportunities, and therefore no new applications will be accepted under the Strategic Project Grants program outside the specified target areas. Please visit the NSERC Web site for further information on the new program.

Interest in Research Networks on the Rise

Interest in the Research Network Grants Program is increasing. The selection committee for this program reviewed a total of 14 preliminary applications in 2003, a 15 per cent increase over 2002. The committee requested full applications from four of the groups.

Two networks, approved in Feb. 2003, were launched in the fall:

The **Learning Object Repositories Network (LORNET)**, under the leadership of Dr. Gilbert Paquette, will do research on networked learning objects repositories, which represent the key element in today's major international trends in distance learning. Learning object repositories are used to make documents, tools, and Web services available for learning and knowledge management within organizations. For more information, visit www.nserc.gc.ca/news/2003/p031016.htm.

The **Cell Factory Bioprocessing Research Network (Cellnet)** seeks to turn living cells into "factories" to develop health-care bioproducts in an efficient and cost-effective way. Led by Dr. Murray Moo-Young of the University of Waterloo, it includes a nationwide consortium of scientists, engineers and industrial leaders devoted to filling a gap in Canada's biotechnology expertise and training the next generation of bioprocessors. For more information, visit www.nserc.gc.ca/news/2003/p031008.htm.

Financial contributions are frequently used as an indicator of the level of commitment of the partner to the network, but the Research Network Grants program is a partnership program and therefore the "engagement" of the partners is an essential aspect of every network. Engagement in this context means that the partners are involved in all aspects of the network, including in the development of the research thrust, the management, the training and the exchange of knowledge.

Scholarships and Fellowships Competition Results

Following their review of more than 3,500 applications last February, NSERC's six scholarships and fellowships selection committees offered 1,704 Postgraduate Scholarships (PGS) to students, and 235 Postdoctoral Fellowships (PDF) to those pursuing postdoctoral research.

The results are shown in the table below:

The Canada Graduate Scholarships

Last February, the federal government established the new Canada Graduate Scholarships (CGS) program. Once fully implemented in 2006, this program will fund 2,000 new one-year master's awards of $17,500 and 2,000 new doctoral awards of $35,000 per year for up to three years. These prestigious scholarships, which are only tenable in Canada, are being awarded by the three federal granting agencies through national competitions. NSERC's share is 600 awards of each type.

Last year, the new scholarships were awarded to the top-ranked applicants in NSERC's regular PGS competition, based on the Scholarships and Fellowships Selection Committee rankings. The discipline distribution of the CGS awards was made in proportion to the number of PGS applications received in each committee. Since the top-ranked applicants no longer needed their PGS awards, the funds were used to extend PGS support to worthy applicants just below the cut-off in the 2003 competition.

The table below indicates the number of CGS awards that were made available in 2003:

Postgraduate Scholarships and Postdoctoral Fellowships 2003 Applications and Awards

Selection Committee	Award Type	Number of Applications	Number of Awards	Success Rate (%)
Engineering	PGS	581	349	60.1
	PDF	130	41	31.5
Computer and Mathematical Sciences	PGS	573	344	60.0
	PDF	142	44	31.0
Physics and Chemistry	PGS	363	218	60.1
	PDF	137	43	31.4
Earth Sciences and Ecology	PGS	431	258	59.9
	PDF	127	40	31.5
Cellular and Molecular Biology	PGS	442	264	59.7
	PDF	113	36	31.9
Life Sciences and Psychology	PGS	453	271	59.8
	PDF	97	31	32.0
TOTAL	**PGS**	**2,843**	**1,704**	**59.9**
	PDF	**746**	**235**	**31.5**

2003 Canada Graduate Scholarships

Selection Committee	CGS Master's	CGS Doctoral
Engineering	26	28
Computer & Math Sciences	27	25
Physics & Chemistry	14	21
Earth Sciences & Ecology	17	26
Cell & Molecular Biology	19	23
Life Sciences & Psychology	21	20
TOTAL	**124**	**143**

News about the 2005 NCE Competition

Following the NCE Selection Committee's review of the thirty-one letters of intent, the NCE Steering Committee invited five of the groups to submit full applications by April 5. The Selection Committee will meet again to evaluate the full applications. The successful networks will be announced in the summer and begin operations in the fall. Here are the groups invited to submit full NCE applications:

Name of Network	Scientific Director	Host Institution
AllerGen (allergy, genes and environment network)	Judah Denburg	McMaster University
Canadian Child Welfare Research Network (CCWRNet)	Christine Wekerle	University of Toronto
Canadian Regenerative Medicine Network (CRM-Net)	Michael Sefton	University of Toronto
Cognitive Impairment Network (CI-NET)	Howard Chertkow	McGill University
Microsystems and Nanoscience Network for Health & the Environment: Microsystems Interfaces Canada	Linda Pilarski	University of Alberta

Funds for Mathematicians and Chemists

NSERC recently provided funds to two disciplines to help them meet the changing needs of their communities:

- In mathematics, seven applications to the one-time Leadership Support Initiative were funded; and
- In chemistry, fifteen once-in-a-lifetime Accelerator Grants for Exceptional New Opportunities were awarded. Each award is worth about $100,000 per year for four years. A second competition for five awards is planned for 2005.

These grants follow from NSERC's 2000–2002 Reallocations Exercise, as described in the January 2003 issue of *Contact*.

For more information on these initiatives and competition results, visit http://www.nserc.gc.ca/programs/prognewsres_e.htm.

First of New Women's Chairs Launched

Dr. Valerie Davidson was recently awarded the first of four new regional Chairs for Women in Science and Engineering (CWSE). Based at the College of Physical and Engineering Sciences at the University of Guelph, the new Chair will address significant issues faced by women in science and engineering in Ontario. She will also be supported by Hewlett Packard Canada (HP), which will match NSERC's contribution of $250,000 over five years.

Martin Schmitz

Valerie Davidson (centre), with students (from left) Cynthia Pun, Nicole Webb, and Shellie Boudreau.

"HP and the university share many common goals, including a strong commitment to providing high-quality educational opportunities and drawing attention to the many opportunities for girls and women in the fields of science and engineering," said HP Canada president and chief executive officer Paul Tsaparis. "This initiative is a perfect blend of those objectives."

Dr. Davidson is well known for her research in process control systems for food and biological engineering.

"The Chair program will help to coordinate outreach activities and to evaluate the effectiveness of different initiatives," she said. "We want it to have a unique interdisciplinary approach, with initiatives that will encourage young women to enter science and engineering (especially computer-intensive programs), give undergrads and grad students tools for career planning and improve conditions for those in the system."

Three additional CWSE – for British Columbia, the Prairies and the Atlantic region – will be announced before the end of 2004. Dr. Claire Deschenes of Université Laval holds the Quebec chair.

A Partnership for Trees

A unique partnership supported by NSERC is letting Dr. Yves Bergeron and his colleagues make the concept of sustainable forestry management a reality.

The NSERC Industrial Research Chair in Sustainable Forestry Management is the first NSERC chair to be held jointly between two universities – the Université du Québec en Abitibi-Témiscamingue and the Université du Québec à Montréal. It's a feature that allows Dr. Bergeron – an internationally renowned scientist – to collaborate with researchers and students from both universities and provide a "one-stop" source of expertise for the contributing partners, who include nine forestry companies and several provincial and federal government agencies.

In their work together they are racking up some pretty impressive achievements.

Novel approaches have emerged from a new understanding of natural disturbances such as fire and insect infestations. These are now being tested in several field trials in collaboration with industrial partners from northwestern Quebec. The Lac Duparquet Research Forest managed by the Universities is also used to illustrate this new way of doing forestry.

The Chair now involves a large and growing team of 9 core researchers and 16 associate members. Over the past five years, they have helped train 34 undergraduate students, 46 graduate students and 9 postdoctoral fellows. All together, they have produced more than 90 peer-reviewed articles, 50 technical reports and 80 conference proceedings.

Bernard Pelletier

Yves Bergeron

"The NSERC Chair program provided an ideal partnership model for supporting the kind of research we need," said Dr. Bergeron. "Our five major research thrusts were developed through consensus and address the needs of all involved. The steering committee comprises academic, industrial and government members. It guides the research and ensures that results are quickly disseminated. By pooling our resources and working together, we are tackling research projects that we could never have handled alone."

Financial information:

During the first term (1998-2003), NSERC provided $1.5 million in funding which was matched by the Chair's partners.

Given its success, the program was recently renewed. Over the next five years, NSERC will provide a further $625,000.

For more information, visit http://web2.uqat.ca/cafd/accueil_800f.htm or contact Dr. Yves Bergeron (on sabbatical at UNBC) at (250) 960-6353 or Robert Therrien (NSERC) at (613) 996-5924.

Newsbureau Working for You

Here are some of the stories about research that the NSERC Newsbureau helped get publicity for this fall:

The Globe and Mail and *Le Devoir* wrote up the University of Toronto's Dr. Mohini Sain's work developing natural fibre-composite materials to replace sheet metal and glass fibres used in automobiles.

Newspapers across the country, as well as CBC's *The National*, featured Dr. Jules Blais of the University of Ottawa's findings on the effects of toxic salmon on our lakes.

Fish stocks were the subject of the Sept. 25 *Bacon & Eggheads* breakfast lecture on Parliament Hill. The talk by Dalhousie University's Dr. Jeff Hutchings was covered by Ken Rockburn's *Talk Politics* on CPAC, and also by Radio Newfoundland.

Dr. Donald Henderson's discovery that the largest known dinosaurs took to the water caused a big splash. The University of Calgary researcher's findings on the ancient, paddling sauropods appeared in the press nationwide, and also on the Discovery Channel's *Daily Planet* and CBC Radio's *Quirks & Quarks*.

We next took to the air with gannets. Using miniature Global Positioning System (GPS) devices that he attached to the big sea birds, Memorial University of Newfoundland professor Dr. Bill Montevecchi has made discoveries about their diverse flying, diving and feeding habits. He was interviewed on CBC's *Radio Noon* Nov. 5.

Earlier in October, *Quirks & Quarks* picked up another Newsbureau story when the show interviewed Dr. Mertice Clark about her research at McMaster University into the implications of the post-partum sexual appetites of male Mongolian gerbils.

Bridging the Gap

NSERC is accepting preliminary applications for four Chairs in Design Engineering and one Chair in Environmental Design Engineering (open to universities in British Columbia) until Feb. 27.

A selection panel will review all preliminary applications, provide feedback to the applicants, and invite full applications (due in September 2004) from successful applicants. The requirement for a preliminary application is new this year.

In the last four years, NSERC has established eleven Chairs in Design Engineering, a discipline that plays a key role in helping create new products and processes that bridge the gap between research and marketable products. Environmental Design specializes in design engineering with a strong potential for impact on the environment and on people's health and safety.

NSERC's Chairs in Design Engineering programs support and complement the Canadian Design Engineering Network's objective of creating high-quality training materials for Canadian universities.

To find out more, please consult the NSERC Web site, http://www.nserc.ca/professors_e.asp?nav=profnav&lbi=toc_c, or contact Bert van den Berg, Portfolio Manager, at (613) 996-0519 or bert.vandenberg@nserc.ca.

New NCE to Improve the Health and Lives of Canadians

Late last fall, Dr. Tom Brzustowski, in his capacity as Chair of the Networks of Centres of Excellence (NCE) Steering Committee, announced a $22.2 million investment in a new Network of Centres of Excellence that will have a huge potential for developing novel ideas in food safety, nutritional quality and human health.

The Advanced Foods and Materials Network (AFMNet) is a unique formation of multi-disciplinary teams involving researchers from the natural sciences, engineering, social sciences, humanities and law. This Network will seek to better understand the structure and function of biomolecules in relation to the structure, texture, chemistry, esthetics, nutrition and safety of foods. The ultimate goal is to develop commercially viable, socially acceptable products that benefit all Canadians.

Advanced foods and materials represent a large and growing market. Current world consumption of natural health products, functional foods and nutraceuticals is estimated at $70 billion annually. These products will have important social and medical benefits for people around the world. They can help reduce health care costs through the prevention of diet-related diseases, and improve public confidence in the food supply through better regulations and laws. The network's research will also contribute to food safety in areas such as new and better anti-microbial agents.

The Advanced Foods and Materials Network is headquartered at the University of Guelph under the scientific leadership of Dr. Rickey Yada, a professor in the Department of Food Science and a Canada Research Chair in Food Protein Structure.

AFMNet is made up of stakeholders from academia, private sectors, and government agencies. The network brings together 87 researchers from 23 universities, as well as 32 industry and 29 government partners from Canada and abroad.

Continued from page 2

The Growth of Demand Continues into 2004-05

The numbers for 2004-05 are once again great news for Canada in the long term, but in the short term they represent a very serious budget challenge to NSERC. It is now evident that the number of first-time applicants (FTA's) for discovery grants in the February 2004 competition has yet again reached an all-time high – 1,010 in a total competition of about 3,000 applicants. That's another 129 more FTA's than last year. But the number of funded researchers who are retiring is expected to be slightly below last year's, at 259. That means a net increase of 751 professors ready to do research.

The net increase represents a potential increase in Canada's capacity for research only if these people stay here, develop careers, teach our students, and work with our industry. And that means that their research must be funded adequately. That funding can't come at the expense of successful researchers already in Canadian universities because that would undermine what the government is trying to achieve.

The Best News

The best news is that most of the first-time applicants to NSERC are very good indeed. University hiring processes now include a thorough assessment of research potential (in the case of entry-level appointments) and accomplishment (in the case of senior people), using very much the same information that first-time applicants present to NSERC. Moreover, the FTA's include all the senior and junior Canada Research Chairs who have arrived since the last competition. This means that the people currently being appointed as professors in science and engineering in Canadian universities are very well qualified to do research, and the result is that their success rates in our competitions are high – about 75 per cent in the last one – much higher than in the past. The NSERC grant selection committees try to fund every candidate who meets the standards of the discipline in peer review. The consequence of that approach is that the funded researchers get, on the average, a grant of only about 45 per cent of what they request.

Budget Pressure Has Built Up

We have managed to support the growing numbers of grantees within the recent budget increases only by squeezing hard in other important programs on which there is also a great demand, including Research Tools and Instruments, NSERC Industrial Research Chairs, NSERC Research Networks, University-Industry Collaborative R&D partnerships, and the Major Facilities Access program that pays for the operation of research facilities and infrastructure including much of that provided through the Canada Foundation for Innovation (CFI) (e.g., $5.6 million p.a. starting January 1, 2004, as our share of the cost of operating the Canadian Light Source in Saskatoon). We are also unable to fund the Nanotechnology Innovation Platform above a token level, or to start new Innovation Platforms in other areas of strategic importance.

Our estimate of these pressures is $60-80 million p.a. (i.e., 10 to 13 per cent of the 2003-04 NSERC budget), with further annual growth required as long as the renewal of faculty continues and the new appointees are all expected to do research.

We should note that in 2003-04, the approximately 450 holders of Canada Research Chairs in science and engineering – half of the eventual number – received a total of $40 million in grants through all NSERC programs. This disproportionately large amount – close to twice the average total amount of grant per professor – is explained by the fact that the Canada Research Chairs are among the best of the researchers we support, and they do very well in all our competitions.

The initiatives grouped under NSERC's New Vision (regional research capacity building, helping community colleges to assist SMEs to innovate in communities, helping to improve math and science education of Canadian children, developing a decision framework for big science projects, and opening some small regional offices) will cost only a small fraction of the budget pressure on our main national programs, in the range of $6 million in 2004-05. The pressure on NSERC's budget would not be relieved to any significant extent if implementation of the New Vision were to be delayed. Even so, we feel we can sustain them as small-scale pilot projects for only one year, and we are designing these pilots to make it possible to evaluate them after one year. We realize that this will be far too early to assess their impacts, but we believe that it will be possible to determine at least whether the programs are working well in addressing the most important needs.

What NSERC Needs to Play Its Role

To play its role in sustaining what the Government of Canada began in 1997, namely to move Canadian universities to a higher level of research capacity in order to contribute to the long-term outcome of prosperity and a better quality of life for Canadians in the 21st Century, NSERC needs a significant budget increase in 2004-05, and further increases to follow as driven by demand. Our best estimate of immediate need is for an increase of 13 per cent. The smaller amount of 10 per cent p.a. requested last year, and again repeated at the Standing Committee on Finance in 2003 before the extra-ordinary growth in demand was known, would keep the average discovery grant frozen in the face of rising cost pressures; it would limit our ability to pay for the operation of infrastructure provided by the CFI early in its program, and it would keep the grants for research tools and instruments far below the levels that have proved necessary.